

# -100mA / -50V Digital transistors (with built-in resistors)

## DTA144VKA

### ● Applications

Inverter, Interface, Driver

### ● Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input, and parasitic effects are almost completely eliminated.
- 3) Only the on / off conditions need to be set for operation, making the device design easy.
- 4) Higher mounting densities can be achieved.

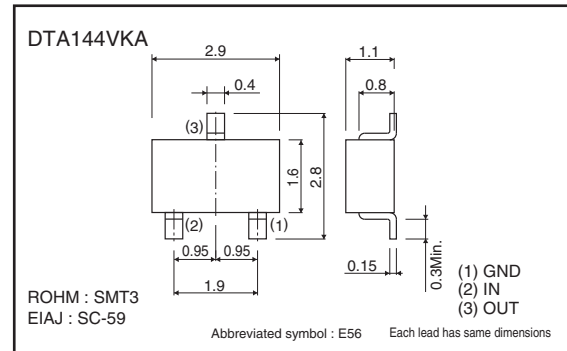
### ● Structure

PNP epitaxial planar silicon transistor  
(Resistor built-in type)

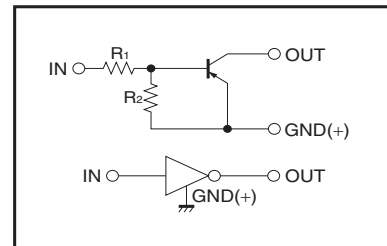
### ● Packaging specifications

Part No.	Package	SMT3
	Packaging type	Taping
	Code	T146
	Basic ordering unit (pieces)	3000
DTA144VKA		○

### ● Dimensions (Unit : mm)



### ● Inner circuit



$R_1=47k\Omega$ ,  $R_2=10k\Omega$

### ● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	$V_{CC}$	-50	V
Input voltage	$V_i$	-40 to +15	V
Output current	$I_o$	-30	mA
	$I_{C(Max.)}$	-100	
Power dissipation	$P_d$	200	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

● Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	-	-	-1	V	$V_{CC} = -5V, I_o = -100\mu A$
	$V_{I(on)}$	-6	-	-		$V_o = -0.3V, I_o = -2mA$
Output voltage	$V_{O(on)}$	-	-0.1	-0.3	V	$I_o = -10mA, I_i = -0.5mA$
Input current	$I_i$	-	-	-0.16	mA	$V_i = -5V$
Output current	$I_{O(off)}$	-	-	-0.5	$\mu A$	$V_{CC} = -50V, V_i = 0V$
DC current gain	$G_i$	33	-	-	-	$I_o = -5mA, V_o = -5V$
Input resistance	$R_1$	32.9	47	61.1	$k\Omega$	-
Resistance ratio	$R_2/R_1$	0.17	0.21	0.26	-	-
Transition frequency	$f_T^*$	-	250	-	MHz	$V_{CE} = -10V, I_E = 5mA, f = 100MHz$

\* Characteristics of built-in transistor.

● Electrical characteristic curves

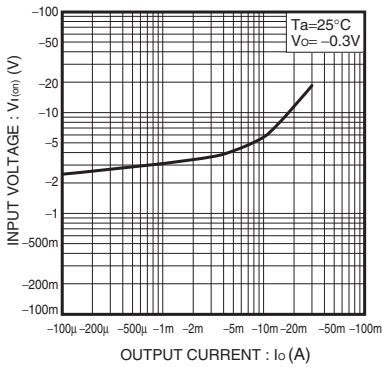


Fig.1 Input voltage vs. Output current (ON characteristics)

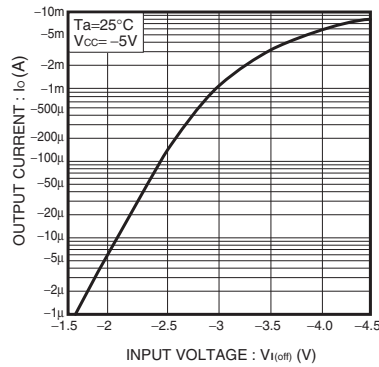


Fig.2 Output current vs. Input voltage (OFF characteristics)

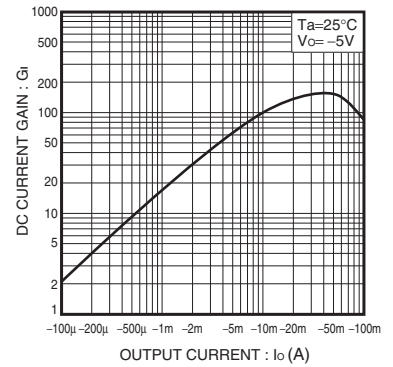


Fig.3 DC current gain vs. Output current characteristics

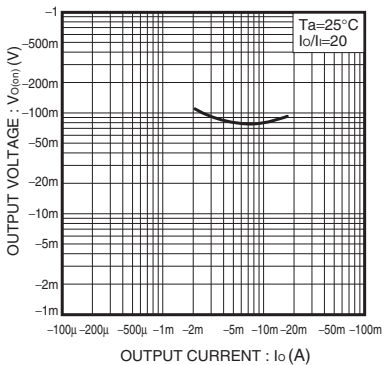


Fig.4 Output voltage vs. Output current characteristics

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